

## Abstract

The numerical analysis system of the invention analyzes the dynamical state of the compressible fluid employing Hybrid Grid Adaptation Method by Finite Volume Method. The initial grid data are created by way of free combination of tetrahedral cells, hexahedral cells and pentahedral cells. The divide-delete index is calculated according to the density of the fluid in each cell. A triangular face of the cell is divided into triangular faces and the quadrilateral face is divided into quadrilateral faces when the cell is divided. The cell is divided only when three conditions are satisfied. The first condition is that the volume of the cell is greater than the minimum volume. The second is that the dividing level of the cell is not the maximum level. The third is that the divide-delete index is greater than the dividing threshold. The cell is recovered to the former undivided cell by deleting and merging divided cells when the cell is not the initial cell and the divide-delete index is less than the deleting threshold. As the freedom of the grid creation is high, the suitable cells are easily created and the calculation efficiency becomes high. (Figure 1)